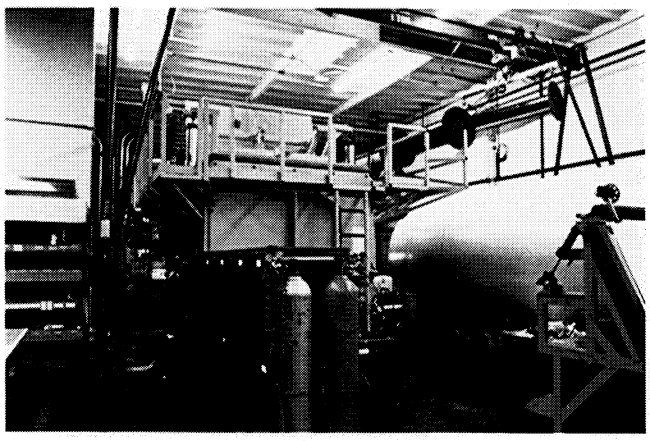
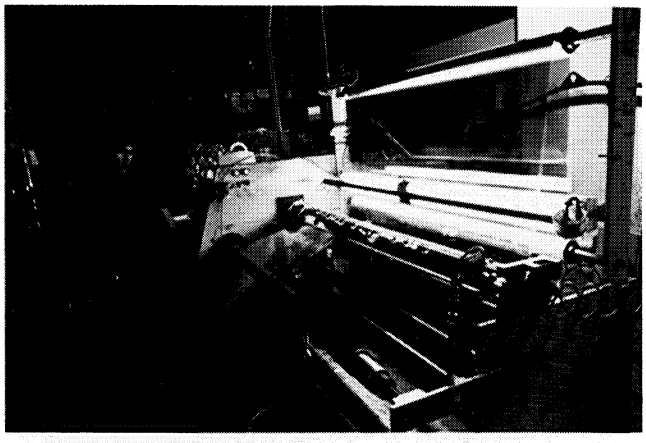
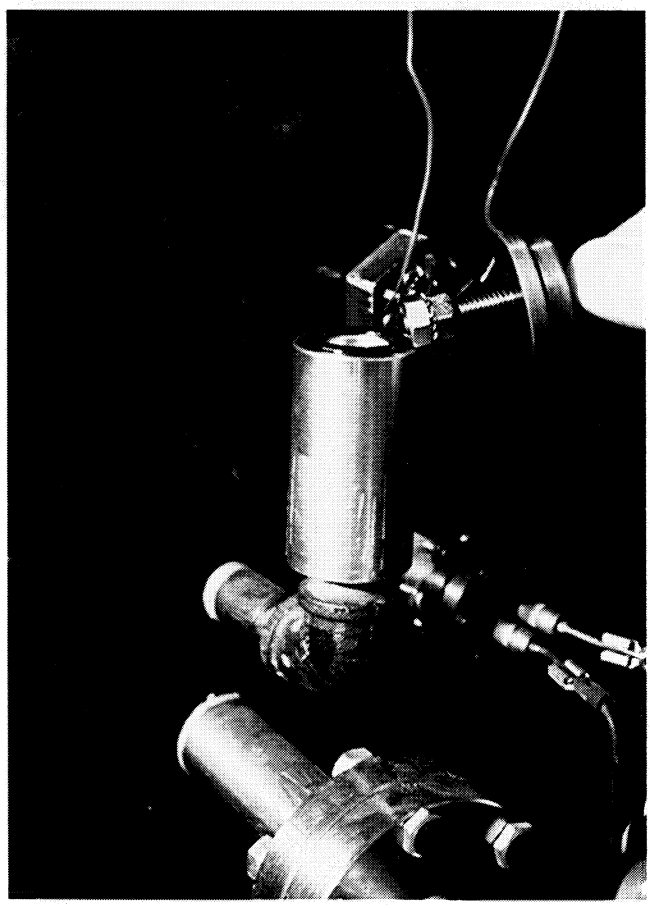
Pressure Relief Valve







Deposition Technology, Inc. (DTI), San Diego, California is an industry leader in the technique of "sputtering," the process of applying filmlike metal coatings onto a substrate, or surface, by bombarding the coating material with electrocharged ions; this causes the material to disintegrate and relocate on the substrate an atom layer at a time. The process allows deposition of a great variety of coating materials—metals, dielectrics and semiconductor materials, for example—on many different types of surfaces.

Extremely thin or thick films can be deposited in uniform layers and it is possible to deposit composite layers of different materials, which opens up a new range of applications. DTI's principal use of sputtering is production of window films for sunlight-blocking glare reduction and evergy savings. The company also provides sputtered coatings for such other applications as packaging materials, electronic circuit boards, solar energy systems, medical uses and dielectric imaging.

At DTI, metal and other coatings are deposited on the substrate in a sputtering chamber shown above. At top right, the finished product of the wide web sputtering system emerges as a 62-inch roll of coated material.

NASA technical information contained in the technology transfer publication *Tech Briefs* provided a productivity-improving benefit to DTI: a special type of valve—originally developed by Lewis Research Center—that relieves pressure beyond a specified limit by allowing gas to escape from a pressurized system. Such valves are installed on two vacuum chambers that are part of DTI's sputtering system. It is common practice to vent a vacuum chamber to a dry, inert gas following a chamber run. Because the gas is under pressure, it is necessary to protect delicate vacuum gauges and other components from overpressure. DTI's use of the NASA-developed valve (above) not only protects the equipment but also frees the operator from monitoring the chamber venting. Fabrication and installation of the valves involved only nominal cost. DTI reports that the valves save an estimated 40 man-hours yearly in addition to avoidance of the substantial downtime and expense that might have resulted from overpressure of sensitive components.